

Cell 1: Import libraries

Cell 2: Select dataset. Dataset=1 or 2. (Don't need to comment out anything. Just select dataset no. There are if elses that handles it)

Definition of Scaling function (Standard scaler, minmax scaler), data preprocessing and splitting to training and test set

Cell 3: Get the x\_train, x\_test, y\_train, y\_test

Cell 4: LR implementation. Function lr\_model → training the model (getting the constant w, b with less error), function test → test the model. Predicted y values are returned

Cell 5: Functions for performance metrics

Cell 6: Splitting the training set to training and validation set

Cell 7: Bagging → preparing 9 training sets from the training set. Train the 9 LR models with these 9 sets. These LR models are base learners.

Cell 8: Testing the base learner → test the 9 models with test set. Get the predicted target values

Cell 9: Performance metrics (except auroc, aupr) for the 9 base learners. Averaging them

Cell 10: Drawing violin plots for all the base learners' performance metrics

Cell 11: Majority voting. Get the ensemble performance metrics

Cell 12: Stacking → extending validation set with the predictions of 9 base learners with validation set

Cell 13: Meta model training with the extended validation set. Extending test set with the predictions from the 9 base learners with test set

Cell 14: Test the meta model with the extended test set

Cell 15: Performance metrics from the stacking

Cell 16: Comparative analysis table as the specs said